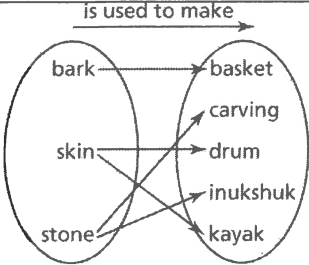
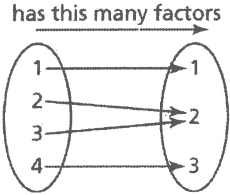
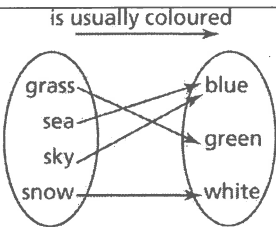
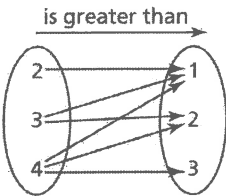


Checkpoint 1

Assess Your Understanding (page 275)

5.1

1. Sample response:

	Description in words	Set of ordered pairs	Arrow diagram	Table or graph														
a)	This relation shows the association “is used to make” from a set of materials to a set of objects.	$\{(\text{skin}, \text{drum}), (\text{skin}, \text{kayak}), (\text{bark}, \text{basket}), (\text{stone}, \text{inukshuk}), (\text{stone}, \text{carving})\}$		<table><tr><th>Material</th><th>Object</th></tr><tr><td>bark</td><td>basket</td></tr><tr><td>skin</td><td>drum</td></tr><tr><td>skin</td><td>kayak</td></tr><tr><td>stone</td><td>carving</td></tr><tr><td>stone</td><td>inukshuk</td></tr></table>	Material	Object	bark	basket	skin	drum	skin	kayak	stone	carving	stone	inukshuk		
Material	Object																	
bark	basket																	
skin	drum																	
skin	kayak																	
stone	carving																	
stone	inukshuk																	
b)	This relation shows the association “has this many factors” from the natural numbers from 1 to 4 to a set of natural numbers.	$\{(1, 1), (2, 2), (3, 2), (4, 3)\}$		<table><tr><th>Number</th><th>Number of Factors</th></tr><tr><td>1</td><td>1</td></tr><tr><td>2</td><td>2</td></tr><tr><td>3</td><td>2</td></tr><tr><td>4</td><td>3</td></tr></table>	Number	Number of Factors	1	1	2	2	3	2	4	3				
Number	Number of Factors																	
1	1																	
2	2																	
3	2																	
4	3																	
c)	This relation shows the association “is usually coloured” from a set of objects to a set of colours.	$\{(\text{grass}, \text{green}), (\text{sea}, \text{blue}), (\text{sky}, \text{blue}), (\text{snow}, \text{white})\}$		<table><tr><th>Object</th><th>Colour</th></tr><tr><td>grass</td><td>green</td></tr><tr><td>sea</td><td>blue</td></tr><tr><td>sky</td><td>blue</td></tr><tr><td>snow</td><td>white</td></tr></table>	Object	Colour	grass	green	sea	blue	sky	blue	snow	white				
Object	Colour																	
grass	green																	
sea	blue																	
sky	blue																	
snow	white																	
d)	For the numbers 1 to 4, the first number in an ordered pair is greater than the second number.	$\{(2, 1), (3, 1), (3, 2), (4, 1), (4, 2), (4, 3)\}$		<table><tr><th>Number</th><th>Number</th></tr><tr><td>2</td><td>1</td></tr><tr><td>3</td><td>1</td></tr><tr><td>3</td><td>2</td></tr><tr><td>4</td><td>1</td></tr><tr><td>4</td><td>2</td></tr><tr><td>4</td><td>3</td></tr></table>	Number	Number	2	1	3	1	3	2	4	1	4	2	4	3
Number	Number																	
2	1																	
3	1																	
3	2																	
4	1																	
4	2																	
4	3																	

5.2

2. a) Justifications may vary. For example:

The relation in part a is not a function because two different ordered pairs have skin as a first element and two different ordered pairs have stone as a first element.

The relation in part b is a function because the ordered pairs have different first elements.

The relation in part c is a function because the ordered pairs have different first elements.

The relation in part d is not a function because two different ordered pairs have 3 as a first element and three different ordered pairs have 4 as a first element.

- b) In part b,
the domain is: $\{1, 2, 3, 4\}$
the range is: $\{1, 2, 3\}$

In part c,
the domain is: $\{\text{grass, sea, sky, snow}\}$
the range is: $\{\text{blue, green, white}\}$

3. Sample response:

- a) i) A relation that is not a function has at least two different ordered pairs with the same first element.

So, this relation is not a function:

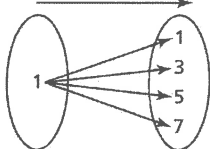
$\{(1, 1), (1, 3), (1, 5), (1, 7)\}$

- ii) For a function, each first element is associated with exactly one second element.

So, this is a function:

$\{(1, 1), (3, 3), (5, 5), (7, 7)\}$

- b) i) Represent the relation as an arrow diagram:
is less than or equal to



Represent the relation as a table of values:

Number	Number
1	1
1	3
1	5
1	7

Pearson
Foundations and Pre-calculus Mathematics 10

Chapter 5
Relations and Functions

Write the equation $t = 11 - 2s$ in terms of s :

$$t = 11 - 2s$$

$$2s = 11 - t$$

$$s = \frac{1}{2}(11 - t)$$

So, when $s > 1.5$:

$$s > 1.5$$

$$\text{Substitute: } s = \frac{1}{2}(11 - t)$$

$$\frac{1}{2}(11 - t) > 1.5$$

$$11 - t > 2(1.5)$$

$$11 - t > 3$$

$$t < 11 - 3$$

$$t < 8$$

So, $t > 5$, $s < 3$, $s > 1.5$, and $t < 8$

Combine these inequalities to determine the domain and range of the function:

The domain is: $1.5 < s < 3$

The range is: $5 < t < 8$